

537,853

(12) INTERNATIONAL PUBLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
24 June 2004 (24.06.2004)

PCT

(10) International Publication Number
WO 2004/053259 A1

(51) International Patent Classification⁷: **E04F 15/10**

(21) International Application Number:
PCT/KR2003/002670

(22) International Filing Date: 5 December 2003 (05.12.2003)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2002-0078558
10 December 2002 (10.12.2002) KR

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant and

(72) Inventor: OH, Sang-Chul [KR/KR]; 2-907 Daelim Apt., 217, Bangi-dong, Songpa-gu, Seoul 138-050 (KR).

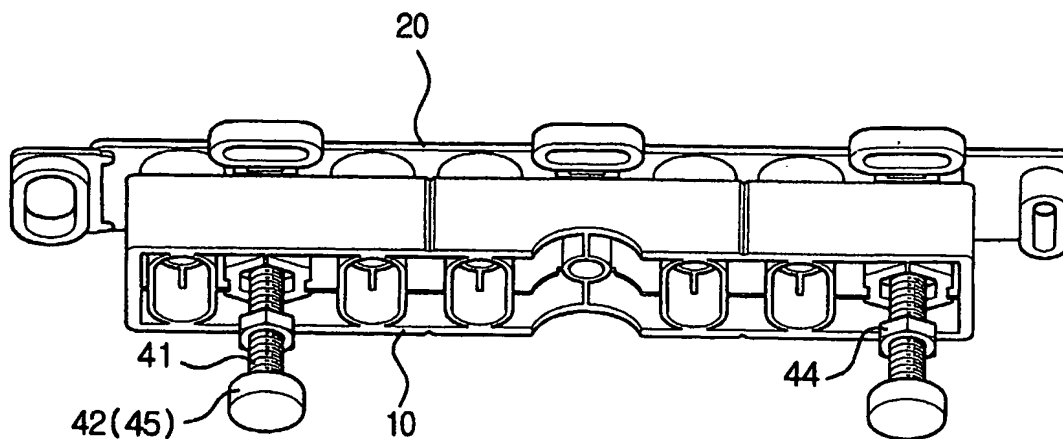
(74) Agent: KOH, Young-Hoe; Sanwoo Bldg. 4th Floor, 1543-11, Seocho-dong, Seocho-gu, Seoul 137-070 (KR).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PREFAB MATERIAL FOR ADJUSTING LEVEL OF FLOOR



(57) Abstract: The present invention relates to a sectional floor-covering capable of adjusting level, which includes a height adjusting block; a supporter coupled to the upper surface of the height adjusting block; slip floorings coupled to the upper surface of the supporter; and horizon adjusting devices mounted to the height adjusting block. The height adjusting blocks and supporters are assembled and installed at a desired position, and slip floorings are mounted and fixed on the assembled height adjusting blocks and supporters so as to install the floor to a wanted height.

WO 2004/053259 A1

PREFAB MATERIAL FOR ADJUSTING LEVEL OF FLOOR**Technical Field**

The present invention relates to a sectional floor-
5 covering mounted on a balcony in a building such as an apartment.
More particularly, the present invention relates to a sectional
floor-covering capable of adjusting level, which includes a
height adjusting block; a supporter coupled to the upper surface
of the height adjusting block; slip floorings coupled to the
10 upper surface of the supporter; and horizon adjusting devices
mounted to the height adjusting block.

Background Art

In general, in most of apartments, a balcony is mounted on
15 the outer part of a living room, and the floor surface of the
living room is constructed higher than the floor surface of the
balcony, and thereby, the border between the living room and the
balcony has a stepped part of a predetermined height.

So, in case of that the existing balcony is remodeled into
20 a part of the living room to use the living room wider,
construction workers pour concrete on the floor surface of the
balcony and level up the height of the balcony to that of the

-2-

living room. However, such construction for leveling up the floor height of the balcony by pouring concrete on the floor surface of the balcony may cause a large-scale accident, such as its own collapse, as exceeding support intensity in an aspect of structural mechanics of the balcony without regard to whether or not it is admitted by the construction laws. In addition, when the balcony is remodeled, it hinders neighbors' living as there occurs noise, and it requires excessive construction costs.

As described above, the floor height of the balcony can be leveled by pouring concrete. Furthermore, as another method to level the floor height of the balcony, as shown in FIG. 1, balks 6 are fixed on the floor with nails to be adjusted in level, and then, strip flooring boards 1 are fixed on the balks 6 with nails or adhesives. However, the flooring construction generates lots of noise and is expensive. Moreover, the conventional flooring construction has another disadvantage in that it is difficult for non-skilled persons to construct the floor.

To solve the above problems and to construct a balcony of the same level as a living room by a simple construction method, sectional floor coverings of various kinds have been used, but most of them cannot be adjusted in level. So, if the surface of the floor installed in the balcony and the surface of the floor installed in the living room are not leveled, spacers are mounted under the sectional floor coverings, so that the floor

-3-

mounted in the balcony is leveled with the floor of the living room.

Furthermore, there is another sectional floor covering capable of adjusting level without mounting of spacers. However, 5 in the sectional floor covering capable of adjusting level, a sectional supporter is mounted on the upper portion of a height adjusting block, a strip flooring is fixed at the upper portion of the sectional supporter, and a height adjusting unit is mounted at the lower portion of the height adjusting block. So, 10 to adjust height, the sectional floor covering must be turned over, and therefore, it is inconvenient to adjust height, and it takes lots of time to adjust height.

Disclosure of Invention

15 Accordingly, the present invention has been made in view of the above problems, and objects of the present invention to solve the above problems are as follows.

An object of the present invention is to provide a sectional floor covering, which is mounted simply without 20 additional flooring construction work.

Another object of the present invention is to provide a sectional floor covering, which is a unit product of a uniform

-4-

size, and which can be connected and expanded in all directions.

A still other object of the present invention is to provide a sectional floor covering capable of adjusting level without mounting spacers.

5 A still other object of the present invention is to provide a sectional floor covering, which provides a level-adjustable unit to easily adjust level at the upper surface of the sectional floor covering.

A still other object of the present invention is to
10 provide a sectional floor covering, which provides a slip preventing unit between the surface of the sectional floor covering and that of a balcony.

A still other object of the present invention is to provide a sectional floor covering, which can keep an adjusted
15 level condition of the assembled sectional floor coverings stably.

A still other object of the present invention is to provide a sectional floor covering, which provides a water drain unit under a state in which the sectional floor coverings are
20 assembled and mounted.

To achieve the above objects, the present invention provides a sectional floor covering capable of adjusting level

-5-

includes: a height adjusting block; a supporter coupled to the upper surface of the height adjusting block; slip floorings coupled to the upper surface of the supporter; and horizon adjusting devices mounted to the height adjusting block.

5 The height adjusting block includes: connecting tongues formed on the upper surface of the height adjusting block; vertical holes perforating the upper and lower surfaces of the height adjusting block; and built-in nuts embedded and fixed into the vertical holes.

10 The supporter includes: connecting holes formed in the lower surface of the supporter and coupled with the connecting tongues; vertical working holes formed in positions corresponding to the vertical holes under a condition in which the supporter is coupled with the height adjusting block, and
15 perforating the upper and lower surfaces of the supporter; connection protrusions extending from a side of the upper surface of the supporter and protruding vertically; connection receiving parts extending from the other side of the upper surface of the supporter; and slip flooring connection pins
20 vertically protruding from the upper surface of the supporter, wherein the connection protrusions are coupled with the connection receiving parts formed on another supporter, which is

-6-

installed adjacent to the present supporter.

The sling flooring includes a coupling groove formed in the lower surface thereof, receiving the slip flooring connection pin, and coupled with the supporter.

5 The horizon adjusting device includes: a screw bar having a screw thread; a head part formed at a side end portion of the screw bar; and a driver hole of a "+" or "-" shape formed in the front end of the other side end portion of the screw bar, wherein the screw bar is inserted into the lower surface of the
10 height adjusting block and coupled with the built-in nut.

Therefore, the present invention can adjust level also at the upper surface of the sectional floor covering by rotating the screw bar of the horizon adjusting device after the simple tool, such as the driver, is inserted into the vertical working
15 hole of the supporter and the vertical hole of the height adjusting block and fit to the driver hole of the horizon adjusting device.

Brief Description of Drawings

20 Further objects and advantages of the invention can be more fully understood from the following detailed description taken in conjunction with the accompanying drawings in which:

-7-

FIG. 1 is a perspective view showing an example in which conventional slip flooring is installed;

FIG. 2 is a detailed perspective view of a height adjusting block according to the present invention;

5 FIG. 3 is a bottom perspective view showing a state in which built-in nuts are coupled with vertical holes of the height adjusting block;

FIG. 4 is a perspective view showing a detailed example of a supporter according to the present invention;

10 FIG. 5 is a perspective view showing a state in which the supporter is coupled with the height adjusting block;

FIG. 6 is a front view showing a state in which the supporter is coupled with the height adjusting block;

FIG. 7 is a bottom perspective view showing a state in
15 which the supporter is coupled with the height adjusting block;

FIG. 8 is a bottom perspective view showing a state in which a horizon adjusting device is mounted under the condition in which the supporter is coupled with the height adjusting block;

20 FIG. 9 is a plan view showing the state in which the horizon adjusting device is mounted under the condition in which the supporter is coupled with the height adjusting block, in

-8-

which a "+" shaped driver hole is formed in the front end portion of a screw bar;

FIG. 10 is a plan view showing the state in which the horizon adjusting device is mounted under the condition in which the supporter is coupled with the height adjusting block, in which a "-" shaped driver hole is formed in the front end portion of the screw bar;

FIG. 11 is a bottom perspective view showing the state in which the horizon adjusting device is mounted under the condition in which the supporter is coupled with the height adjusting block, which is a state before a locking nut is tightened;

FIG. 12 is a perspective view showing a state in which a slip flooring is installed on the upper surface of the supporter under the condition in which the supporter is coupled with the height adjusting block; and

FIG. 13 is a perspective view showing a completely assembled state of the sectional floor coverings capable of adjusting level according to the present invention.

<Explanation of reference numerals of essential parts in drawings>

10: height adjusting block 11: connecting tongue

12: vertical hole

13: built-in nut

-9-

14: drain hole 15: connecting groove

20: supporter 21: connecting hole

22: vertical working hole 23: connection protrusion

```
24: connection receiving part
```

5 25: slip flooring connection pin

30: slip flooring 31: coupling groove

40: horizon adjusting device 41: screw bar

42: head part 43: driver hole

44: locking nut 45: rubber cover

10

Best Mode for Carrying Out the Invention

The present invention will now be described in detail in connection with preferred embodiments with reference to the accompanying drawings.

As shown in FIGS. 2 and 3, a height adjusting block 10 includes connecting tongues 11 formed on the upper surface of a height adjusting block 10, vertical holes 12 perforating the upper surface and the lower surface of the height adjusting block 10, and built-in nuts 13 respectively embedded and fixed in the vertical holes 12.

The shape of the connecting tongues 11 is not restricted to the shape shown in FIG. 2, and one of various shapes, such as

-10-

a circle, an oval and others, can be selected. Also, the shape of the section of the vertical hole 12 is not restricted to the shape shown in FIGS. 2 or 3, and one of various shapes, such as a circle, a hexagon and others, can be selected if the built-in nut is embedded and fixed therein and spaces for moving screw bars of horizon adjusting devices 40 vertically through the vertical holes 12 are secured.

The connecting tongues 11 of the height adjusting block 10 are coupled with connecting holes 21 of a supporter 20 shown in FIG. 4, and the horizon adjusting devices 40 are mounted in the vertical holes 12 respectively, in which the built-in nuts 13 are embedded, as shown in FIG. 11. Meanwhile, as shown in FIGS. 2 or 6, semicircular drain holes 14 are formed in the lower surface of the height adjusting block 10 to allow a smooth water flow along a water curving slant surface of the floor of a balcony. Moreover, as shown in FIG. 3, connecting grooves 15, which will be coupled with the connecting tongues 11, are formed at the lower surface of the height adjusting block 10 in correspondence with the shape of the connecting tongues 11, so that a number of the height adjusting blocks 10 can be piled up by coupling the connecting tongues 11 with the connecting grooves 15.

-11-

As shown in FIG. 4, the supporter 20 includes: connecting holes 21 formed in the lower surface thereof, which will be coupled with the connecting tongues 11 corresponding to the shape of the connecting tongues 11 of the height adjusting block 10; vertical working holes 22 formed in positions, where they correspond with the vertical holes 12 of the height adjusting block 10, to perforate the upper and lower surfaces of the supporter 20 under a condition in which the height adjusting block 10 and the supporter 20 are coupled with each other by the connecting tongues 11 and the connecting holes 21; connection protrusions 23 extending from a side of the upper surface of the supporter 20 and protruding vertically; connection receiving parts 24 extending from the other side of the upper surface of the supporter 20 and corresponding to the shape of the connection protrusions 23; and slip flooring connection pins 25 protruding from the upper surface of the supporter 20 vertically. The connection protrusions 23 are coupled to the connection receiving parts 24 formed on another supporter 20, which is mounted adjacent to the present supporter 20, so that a number of supporters 20 can be connected vertically and horizontally to expand the floor covering.

As shown in FIG. 4, the connecting holes 21 formed in the

-12-

supporter 20 can be formed to perforate the upper and lower surfaces of the supporter 20, are not restricted to the shape shown in FIG. 4, and can have any shape if the connection protrusions 23 and the connection receiving parts 24 are
5 connected with each other to continuously connect a number of the supporters 20 vertically and horizontally. The shape of the slip flooring connection pins 25 is not restricted to the shape shown in FIG. 4, and can be selected from various shapes capable of fixing a slip flooring 30 by being coupled with coupling
10 grooves 31 respectively formed in the lower surfaces of the slip floorings 30.

The slip coupling groove 31 formed in the lower surface of the slip flooring 30 has the same shape as the slip flooring connection pin 25, so that the slip floorings 30 can be fixed to
15 the supporter 20 by coupling the slip flooring connection pins 25 with the coupling grooves 31 thereof.

As shown in FIG. 11, the horizon adjusting device 40 includes a screw bar 41 having a screw thread, a head part 42 formed on an end portion of a side of the screw bar 41, and "+"
20 or "-" shaped driver hole 43 formed in the front end portion of the other side end of the screw bar 41. The screw bar 41 is inserted into the lower surface of the height adjusting block 10

-13-

and coupled to the built-in nut 13.

Therefore, when the horizon adjusting devices 40 are coupled with the built-in nuts 13, the screw bars 41 can be moved vertically while rotating through the vertical working holes 22 of the supporter 20 and the vertical holes 12 of the height adjusting block 10, and it can be checked if a worker looks down the driver hole 43, which is formed at the front end of the screw bar 41, at the upper surface of the supporter 20, as shown in FIGS. 9 and 10. The reason is that positions of the vertical holes 12 of the height adjusting block 10 and those of the vertical working holes 22 of the supporter 20 are corresponded with each other when the height adjusting block 10 is coupled with the supporter 20, and that the screw bar 41 is coupled with the built-in nut 13 embedded in the vertical hole 12 of the height adjusting block 10. Therefore, the screw bar 41 can be moved vertically by rotating the screw bar 41 using a simple tool, such as a driver, through the vertical working hole 22 and the vertical hole 12 from the upper surface of the supporter 20. As described above, the present invention can adjust level of the floor coverings conveniently by rotating the screw bar 41 of the horizon adjusting device 40 using the simple tool, such as the driver, from the upper surface of the

-14-

supporter 20 under a condition that the height adjusting block 10 and the supporter 20 are coupled with each other and the combination of the height adjusting block 10 and supporter 20 is spread on the balcony.

5 Furthermore, as shown in FIG. 11, the screw bar 41 of the horizon adjusting device 40 further includes a locking nut 44 without regard to the built-in nuts 13 embedded in the vertical hole 12 of the height adjusting block 10. The locking nut 44 can prevent rotation of the screw bar 41 when the adjustment of
10 level is finished, thereby providing floor stability of the floor coverings. In other words, when the screw bar 41 is fixed and the locking nut 44 is rotated and tightened, the screw bar 41 of the horizon adjusting device 40 is tightly fixed to the height adjusting block 10 to always maintain a uniform height.

15 In addition, as shown in FIG. 11, the head part 42 of the horizon adjusting device 40 is packed with a rubber cover 45 to prevent slip of a tile floor surface of the balcony or a bath room.

FIG. 12 shows a state in which the slip flooring 30 is
20 assembled to the sectional floor covering capable of adjusting level according to the present invention. In the drawing, the connecting tongues 11 of the height adjusting block 10 are

-15-

coupled with the connecting holes 21 of the supporter 20, and the coupling grooves 31 of the slip floorings 30 are coupled and fixed to the slip flooring connection pins 25.

FIG. 13 is a brief view of a detail embodiment of the present invention, in which the supporter 20 is assembled onto the height adjusting block 10 and the slip flooring 30 is attached to the upper surface of the supporter 20. In the drawing, the horizon adjusting device 40 is not shown, but the head part 42 of the horizon adjusting device 40 is mounted on the lower surface of the height adjusting block 10, and at this time, the head part 42 is directed toward the ground.

Industrial Applicability

By the above structure, the present invention has the following effects.

First, the sectional floor covering according to the present invention can be easily installed using the height adjusting block 10 and the horizon adjusting devices 40 without additional flooring construction, thereby removing various ill effects (noise, financial burden, occurrence of defect of a building, and so on) caused by excessive expansion construction of the balcony, and providing environmentally friendly

-16-

efficiency and economical efficiency by a rapid installation.

Second, as the present invention is a unit product of a uniform size, the present invention can be connected and expanded in all directions by coupling and connecting the connection protrusions 23 and the connection receiving parts 24 of the supporter 20.

Third, the present invention can adjust level using the height adjusting block 10 and the horizon adjusting devices 40 without installation of spacers.

10 Fourth, the present invention can adjust level also at the upper surface of the sectional floor covering by rotating the screw bar 41 after the simple tool, such as the driver, is inserted into the vertical working hole 22 of the supporter 20 and the vertical hole 12 of the height adjusting block 10 and fit to the driver hole 43 formed in the front end of the screw bar 41.

15 Fifth, the present invention can prevent slip between the sectional floor covering and the surface of the balcony by packing the head part 42 of the horizon adjusting device 40 with the rubber cover 45.

Sixth, the present invention has the locking nut 44 for removing a unstably fixed condition by an interval between the

-17-

built-in nut 13 and the screw bar 41 of the horizon adjusting device 40.

Seventh, the present invention can provide a smooth water drain even under a condition in which the sectional floor covering is installed as having the drain hole 14 formed in the lower surface of the height adjusting block 10.

While the present invention has been described with reference to the particular illustrative embodiments, it is not to be restricted by the embodiments but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiments without departing from the scope and spirit of the present invention.

-18-

What is claimed is:

1. A sectional floor covering capable of adjusting level,
the sectional floor covering comprising:

a height adjusting block;

a supporter coupled to the upper surface of the height
adjusting block;

slip floorings coupled to the upper surface of the
supporter; and

horizon adjusting devices mounted to the height adjusting
block,

wherein the height adjusting block includes:

connecting tongues formed on the upper surface of the
height adjusting block;

vertical holes perforating the upper and lower surfaces of
the height adjusting block; and

built-in nuts embedded and fixed into the vertical holes,

wherein the supporter includes:

connecting holes formed in the lower surface of the
supporter and coupled with the connecting tongues;

vertical working holes formed in positions corresponding
to the vertical holes under a condition in which the supporter

-19-

is coupled with the height adjusting block, and perforating the upper and lower surfaces of the supporter;

connection protrusions extending from a side of the upper surface of the supporter and protruding vertically;

connection receiving parts extending from the other side of the upper surface of the supporter; and

slip flooring connection pins formed on the upper surface of the supporter, wherein the connection protrusions are coupled with the connection receiving parts formed on another supporter, which is installed adjacent to the present supporter,

wherein the sling flooring includes a coupling groove formed in the lower surface thereof, receiving the slip flooring connection pin and coupled with the supporter,

wherein the horizon adjusting device includes:

a screw bar having a screw thread;

a head part formed at a side end portion of the screw bar;

and

a driver hole of a "+" or "-" shape formed in the front end of the other side end portion of the screw bar, wherein the screw bar is inserted into the lower surface of the height adjusting block and coupled with the built-in nut.

-20-

2. A sectional floor covering capable of adjusting level according to claim 1, further comprising a locking nut fastened to the screw bar of the horizon adjusting device.

3. A sectional floor covering capable of adjusting level according to claim 1, wherein the head part of the horizon adjusting device is packed with a rubber cover.

4. A sectional floor covering capable of adjusting level according to claim 1, wherein the height adjusting block has drain holes formed in the lower surface thereof.

5. A sectional floor covering capable of adjusting level according to claim 1, wherein the height adjusting block has connecting grooves formed in the lower surface thereof, so that a number of height adjusting blocks can be piled up by coupling the connecting tongues and the connecting grooves with each other.

1/9

FIG. 1

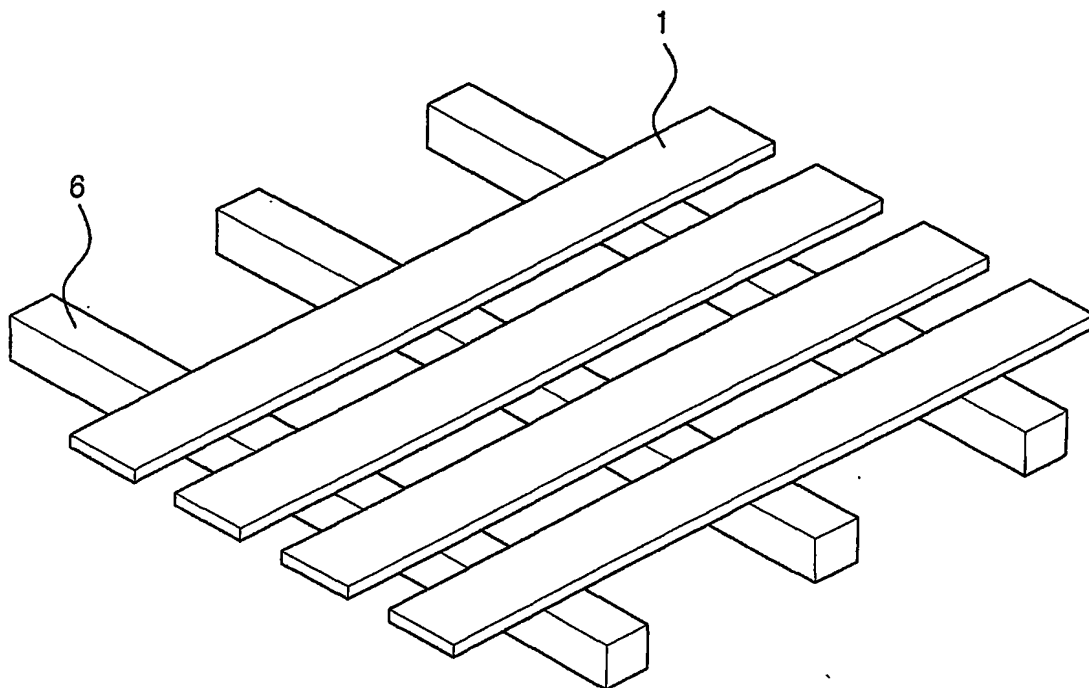
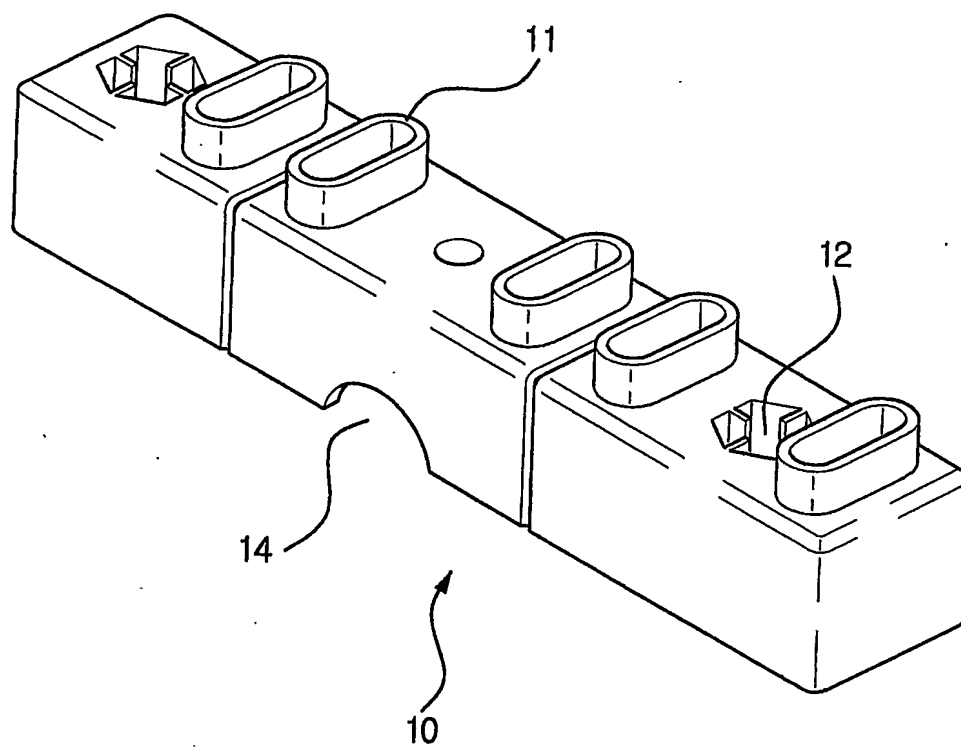


FIG. 2

2/9



3/9

FIG. 3

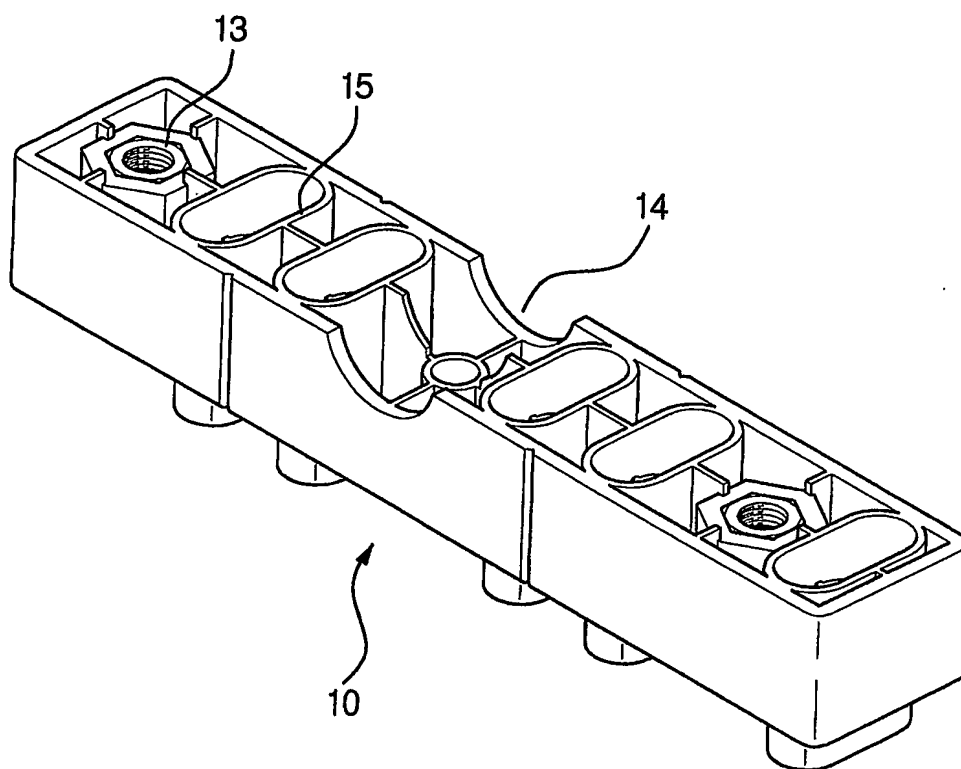
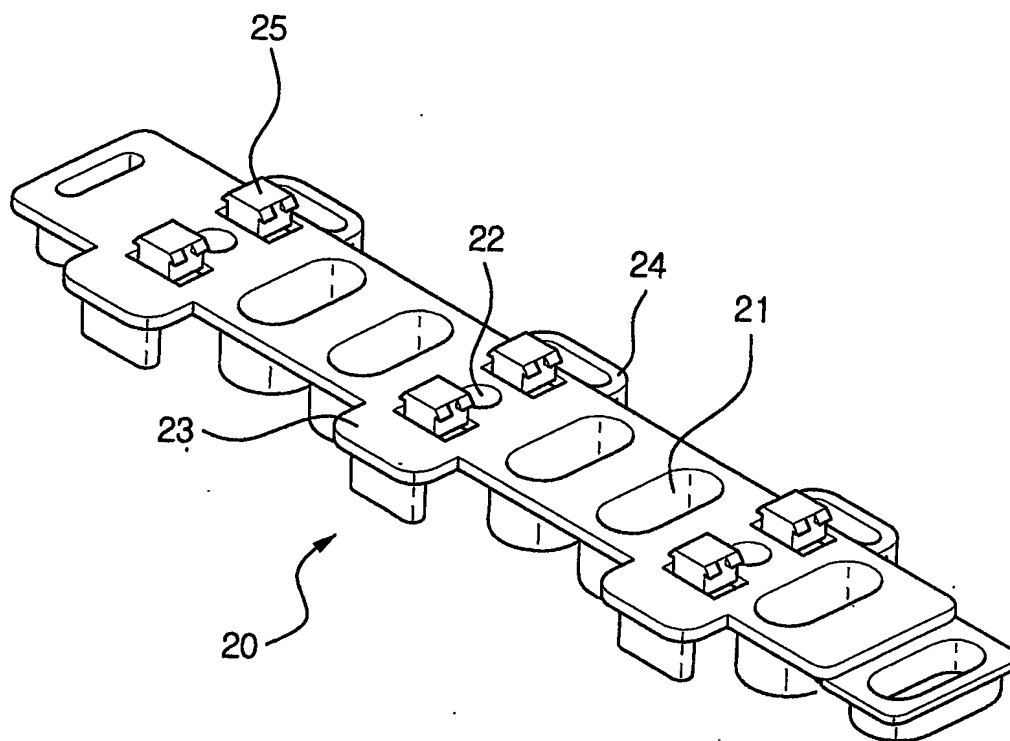


FIG. 4



5/9

FIG. 5

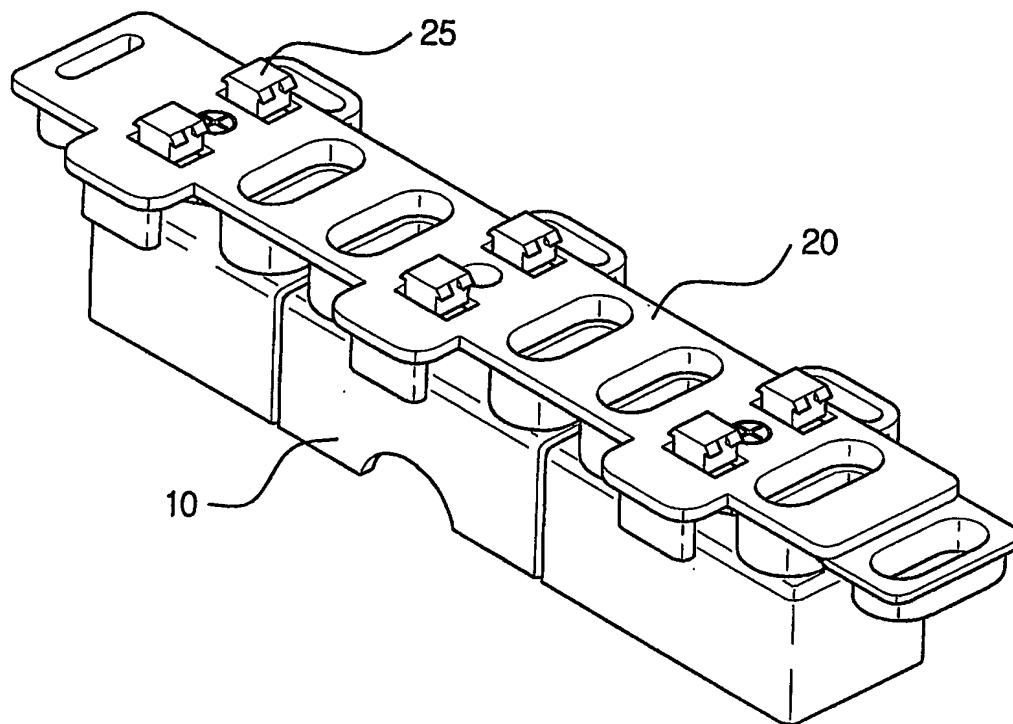


FIG. 6

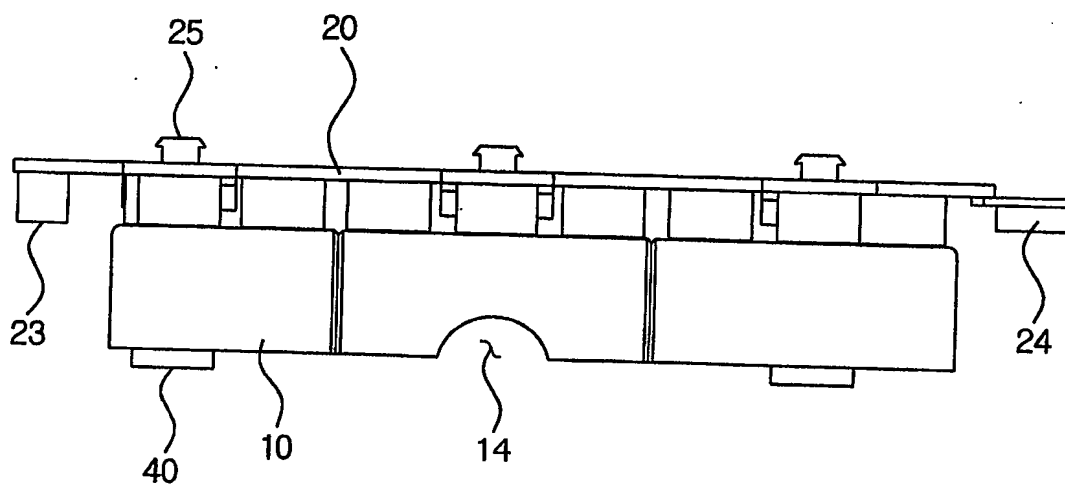
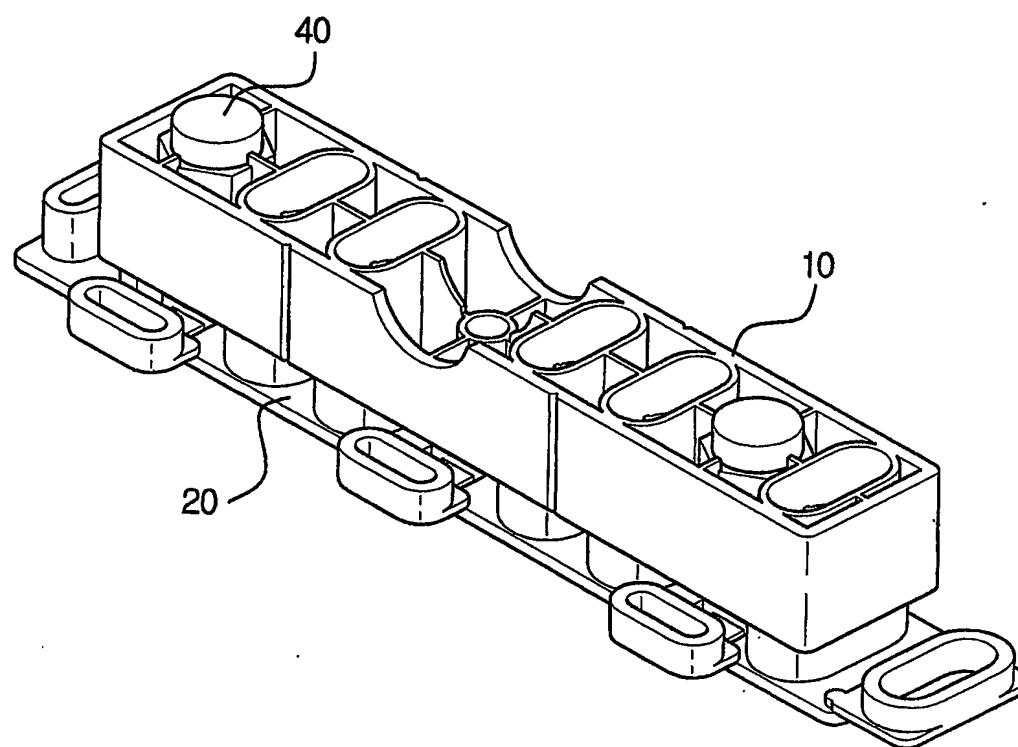


FIG. 7



7/9

FIG. 8

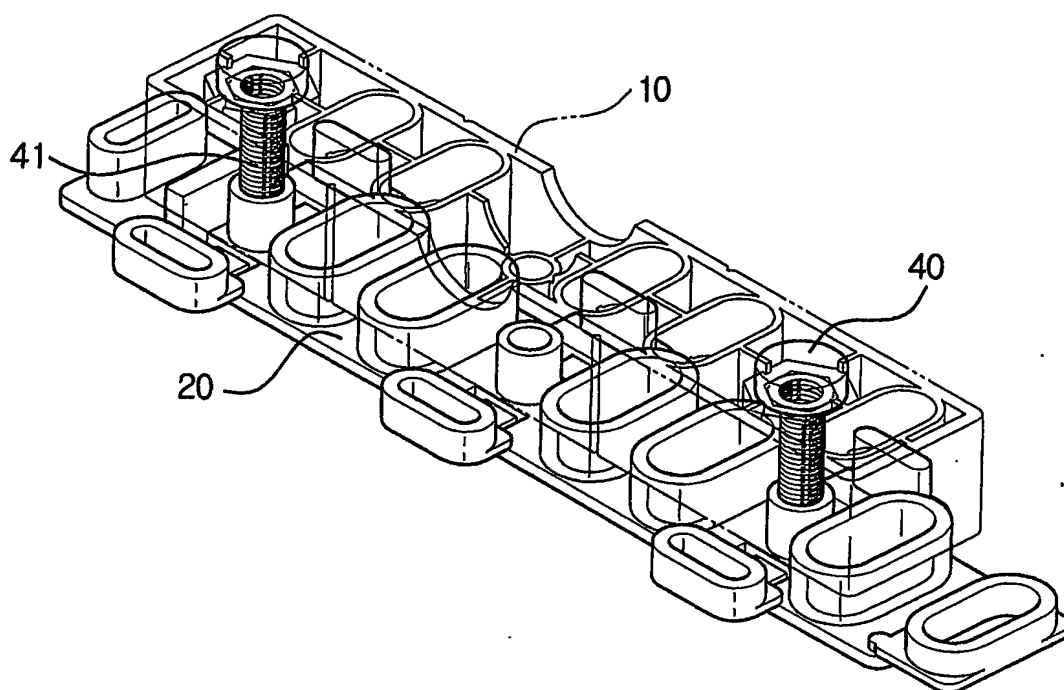


FIG. 9

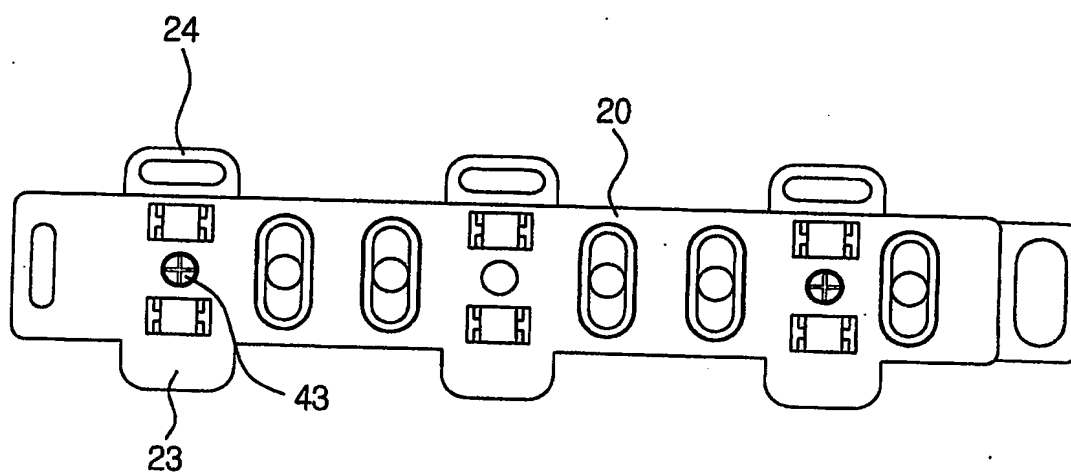


FIG. 10

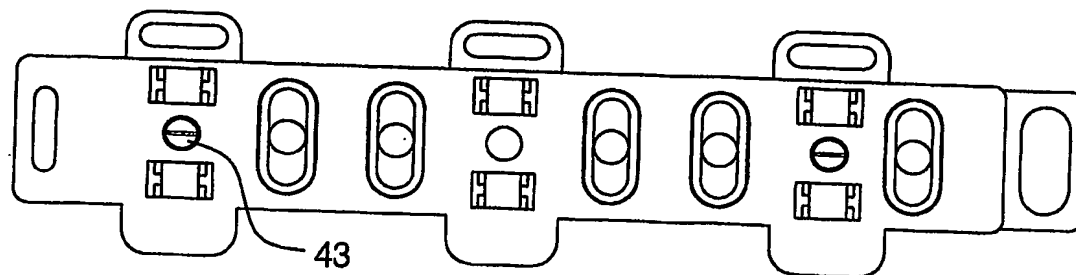


FIG. 11

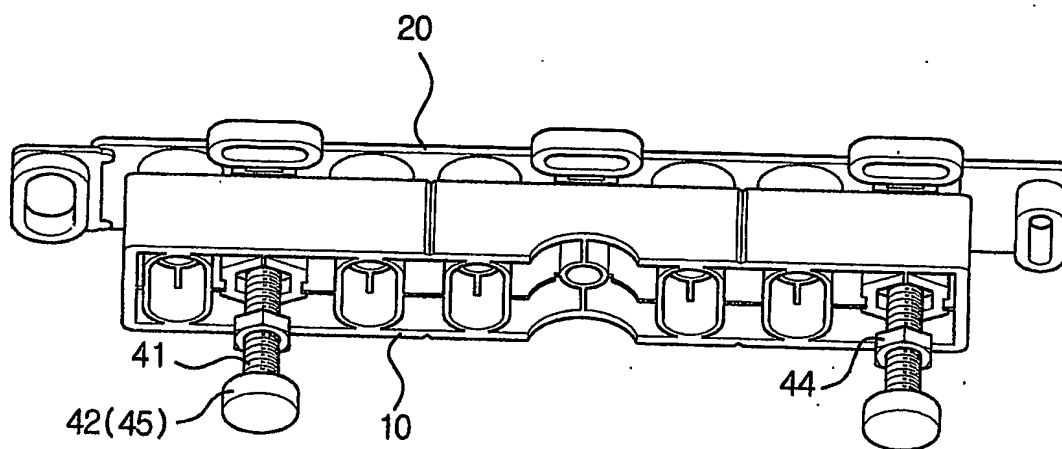


FIG. 12

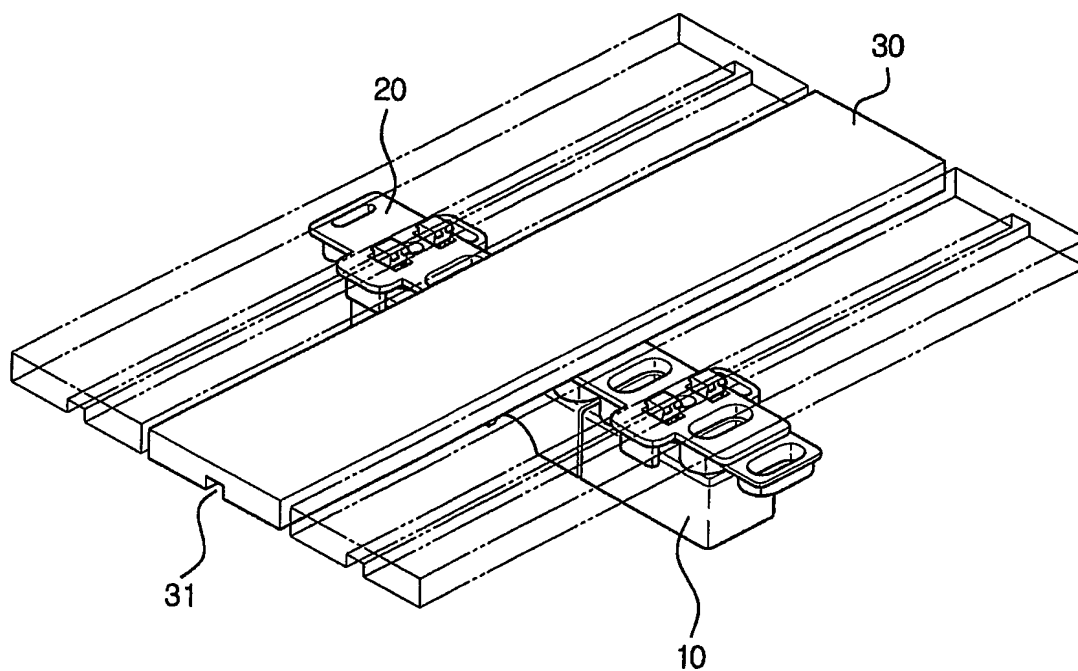
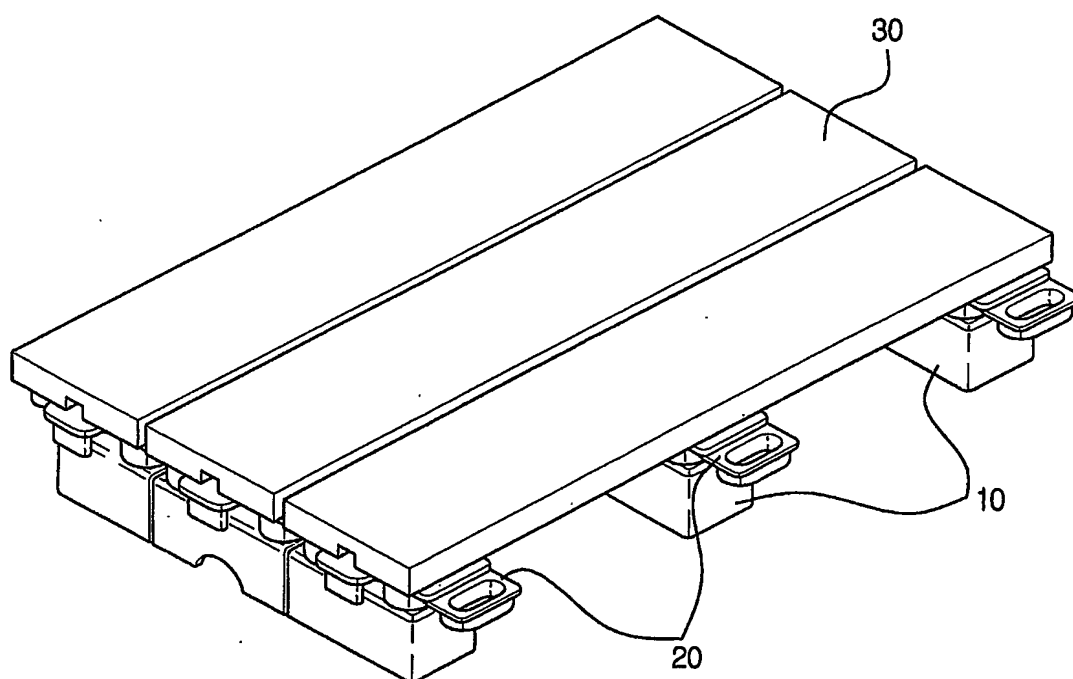


FIG. 13



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2003/002670

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 E04F 15/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC E04F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
KR,JP: classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4905437 A (John Heather) 6 Mar. 1990	1-5
A	JP H07-279377 A(Ohbayashi Corp.) 27 Oct. 1995	1-5
A	JP H03-36361 A(Itoki Kosakusho Co Ltd.) 18 Feb. 1991	1-5

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

09 MARCH 2004 (09.03.2004)

Date of mailing of the international search report

10 MARCH 2004 (10.03.2004)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM, Jong In

Telephone No. 82-42-481-5799

